

## Abstract

The carbonate marine depositional systems (CMDS) are widespread and diverse, which are integrated through the MORPHO database during the Phanerozoic eon. Integrating the *Morphometries of Carbonate Marine Depositional Systems along the Mesozoic to Cenozoic Eras* with the global paleogeographic maps produces a four-dimensional model, which is useful for updating, organizing, storing, retrieving and integrating data, concepts, facts and case studies. This project is an example of the importance and utility of a systematic classification, organization and analysis of information, in order to facilitate the comparisons between CMDS and to develop more accurate and predictive models.

The relationship of the carbonate production between carbonate ramp, isolated build-up platform and platform systems during the Mesozoic to Cenozoic eras, was examined in this project. In general, the thicknesses of the sequences of carbonate platform and isolated build up platform systems were greater than those of carbonate ramp systems during the two eras. Fluctuations in platform accumulation rates and dimension sizes were much more pronounced than the fluctuation in carbonate ramp systems. One important factor to consider was the tectonic setting, because it altered the geodynamic by the continents migration. Other important factors include the biologic evolution (calcitic vs aragonite mineralogy), the climatic conditions and the eustatic sea-level changes, all of which affected drastically the sedimentation of these systems, and finally, the quality of the reservoirs.

The carbonate ramp systems classification is debatable, because in some cases, the calculation of inclination exceeds the  $0.1^\circ$ , which would be in contradiction with (Burchette & Wright, 1992) definition. For this reason, this project discusses the carbonate ramp definition and suggests incorporating it into the same carbonate marine deposit as a sub-category of a carbonate platform system.

**Key-words: Morphology, marine carbonates, carbonate system, paleogeography, basin type, sea-level, biota, reservoir, carbonate platform, carbonate ramp, carbonate isolated build-up platform.**